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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,875	02/01/2001	Justin C. Chuang	2000-0071	3156
7590 07/26/2005				
MR.S.H.DWORETSKY AT&T CORP., ROOM 2A-207 ONE AT&T WAY BEDMINISTER, NJ 07921			EXAMINER TSE, YOUNG TOI	
			ART UNIT 2637	PAPER NUMBER

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/774,875

Applicant(s)

CHUANG ET AL.

Examiner

YOUNG T. TSE

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 7-9, 16, 21, 22, 24, 26, 27 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 7-9, 27, 30-32 and 36 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 16, 21, 22, 24, 26 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement..

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 12, 2005 have been fully considered but they are not persuasive.

The Applicant mainly argues that the reference generator 175 effectively imparts a feedback path. However, imparting a feedback path is not tantamount to an iterative approach or process, which is what the rejected claims 1 and 27 clearly specified. The terms "iterative", "iteratively", and "iteration" are not found anywhere in the reference, and there is no mention of any actions that involve repetition, recurrence, or iteration.

The examiner agreed the word "iterative", "iteratively", or "iteration" is not used in the reference. The term feedback path from a channel decoder to a channel estimator of an equalizer inherently includes the iterative of data and channel estimation procedures. The Applicant is suggested to view the newly cited four U.S. patents. Patent 5,434,623 uses the phrase "[T]he calculation of the joint quantizing factor may be done on either a closed-loop (feedback method), or iterating open-loop (feed forward method) basis, but, ...", see column 5, lines 1-7. Patent 6,339,612 uses "two iteration procedures are proposed for estimating the transmitted data symbol vector based on the sub-system from of equation 29; one is called forward propagation multiplier joint detection (FPMJD), the other is called forward-propagation multiplier joint detection (FBPMJD)", see column 8, lines 44-51. Patent 6,459,728 uses "the soft information supplied by the M single-user decoders to calculate the optimum, feed-forward and

feed-back filter weights after each iteration, see column 10, lines 50-53. Further, the instant application also use the term "fed back into channel estimator 165 (paragraphs 006 and 007).

Drawings

2. The drawings were received on May 12, 2005. These drawings are acceptable.
3. The drawings are objected to because the block elements 160 shown in the replacement sheet Figure 1A should be labeled as "DEMODULATOR", not "DEMUX". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The substitute specification filed 04 October 2004 has been entered.

Claim Objections

5. Claims 2-3 and 30-32 are objected to because of the following informalities:

In claim 2, line 18, "a training block" should be "said training block" for clarity; line 19, the word "of" should be deleted.

Claim 3 depends upon claim 2.

In claim 30, line 3, "said received multicarrier signal" should be "said transformed multicarrier signal".

Claims 31 and 32 depend upon claim 30.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 7-9, 33-34, 16, 21-22, 24, 26, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, lines 1-2, the phrase "each of said decoding steps" is indefinite since only one decoding step is recited in claim 1; lines 3 and 4, the phrases "said accepted

transformed blocks” and “the demodulated multicarrier signal” both lack antecedent basis.

Claims 8-9 and 33-34 depend upon claim 7.

In claim 16, lines 7, 27, 28, and 30, the phrases “said frame having block number N (blocks N)” and the number “N” are not understood.

Claims 21-22, 24, 26 and 35 depend upon claim 16.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 27 and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Cimini, Jr. et al..

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Cimini, Jr. et al. (U.S. Patent No. 6,327,314) discloses a method and apparatus in Figure 1 provide channel estimation for multicarrier OFDM system.

With respect to claims 1, 27 and 36, the multicarrier OFDM system shown in Figure 1 comprises a transmitter section 110 and a receiver section 160. The receiver section 160 comprises a plurality of Fast Fourier transformers FFT (1621 and 1622) for receiving multicarrier signals from the transmitter section 110; a channel estimation circuit 170 for estimating the channel characteristics of the multicarrier signals from the FFT transformers 1621 1622 using iterative forward processing as recited in claim 1 and also using iterative backward processing, which is feedback from a reference generator 175 through signal adjusters 1641 and 1642, a summation device 166, a demodulator 167 and a R-S decoder 168 as recited in claim 27, wherein the transformed multicarrier signals are decoded by the R-S decoder 168. See column 1, lines 51-62 and column 4, lines 26-49.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 7-9 and 30-34 are rejected under 35 U.S.C. 103(a) as being obvious over Cimini, Jr. et al. in view of Toskala et al. (Newly cited).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Cimini, Jr. et al. discloses all the claimed subject matter as applied to claims 1 and 27, which is already discussed in paragraph 13 above. However, Cimini, Jr. et al. does not explicitly show or suggest all the claimed subject matter as recited in claims 7-9 and 30-34.

Toskala et al. (U.S. Patent No. 6,480,554) also discloses a method and apparatus in Figures 1A-1C for channel estimation in a CDMA communication system.

In Figure 1A, a coherent combiner & demodulator 38 is provided after a channel estimation unit 37 for demodulating and combining the channel estimation of the channel characteristics (claims 9 and 30).

In Figure 1B or 1C, a deinterleaving circuit 46 and a Viterbi decoding circuit 48 are provided after the coherent combiner & demodulator 38 via a bit detection circuit 42 for deinterleaving and Viterbi decoding the demodulated signal (claims 7-8 and 30-31).

With respect to claims 11-12, the demodulator 167 shown in Figure 1 of the Cimini's patent is performed for all signals of the multicarrier signals.

With respect to claims 32-34, the demodulator 167 shown in Figure 1 of the Cimini's patent (column 1, lines 51-62) and the demodulator 38 shown in Figure 1A of the Toskala's patent (column 4, lines 53-55) are performed using QPSK demodulation techniques.

Therefore, it would have been obvious to one of ordinary skill in the art to include a combiner circuit and a deinterleaver circuit in Cimini's receiver circuit between the demodulator 167 and the R-S decoder 168 for the purpose of combining the result of the demodulated signals and interleaving the demodulated signal before applying the demodulation signal for error correction to the R-S decoder 168 as taught by Toskala.

Allowable Subject Matter

12. Claims 2 and 3 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

13. Claims 16, 21-22, 24, 26 and 35 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 1stst and 2nd paragraph, set forth in this Office action.

Conclusion

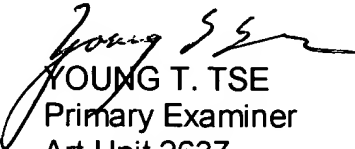
14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOUNG T. TSE whose telephone number is (571) 272-3051. The examiner can normally be reached on Monday-Thursday and alternative Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The Central FAX Number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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Art Unit 2637